The Impact of Funds and Fund Family Characteristics on Fund Performance: Evidence from Malaysia

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ABSTRACT

Islamic mutual funds (IMFs) have been growing as an alternative investment vehicle for investors who want to combine value and financial objectives in their investment. A group of funds is managed by an investment company called a family of funds, and different fund families follow different strategies that distinguish them from each other. In addition to this, characteristics of fund families influence the performance of fund families. This study investigates the extent to which fund families and fund characteristics contribute to explaining fund returns differentiated by managers' stock selection and market timing abilities in Malaysia for the period 2009 to 2016.

In the first step, the study used Jensen's (1968) model to calculate the fund performance, and the Henriksson and Merton model (1981) and Treynor and Mazuy (1966) to separate the performance into a market timing and fund selection. In the second step, using the coefficient estimates of fund selection and timing measures as dependent variables, the study tested the extent to which fund family and fund characteristics are associated with selectivity and timing performance measures. The results show the managers of IMFs have poor selectivity skills and good market timing ability. The results also show that fund family characteristics have a significant impact on the performance of Islamic funds' in Malaysia whether using the Treynor and Mazuy (T&M) or the Henrikson and Merton (H&M) model.

Keywords: Fund Performance, Fund Family Size, Fund Family Age, Islamic Mutual Fund

INTRODUCTION

Islamic finance has rapidly developed throughout the past decade and is continuing to expand. The Islamic

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Finance Development Report (2018) reported that the total value of global Islamic financial services reached US$2.4 trillion in 2018, compared to US$2.2 trillion in 2016. Moreover, the size of the industry has grown by at least 11 per cent annually. The report also forecast that by 2023, the industry would grow to US$3.8 trillion. In addition, today, Islamic finance comprises many types of financial services such as fund management (mutual funds), Islamic banking, Islamic insurance (takaful), and Islamic bonds (sukuk) (Kammer et al., 2015).

The mutual fund is an investment company that collects money from shareholders and invests it in assorted securities, including money market instruments, stocks, and bonds. Moreover, mutual funds offer attractive advantages such as the ability to invest in an equity fund without incurring transaction costs or cost of collecting information; thus, mutual funds allow diversification and provide administration in dealing with investments to reduce the workload of individual investors (Ahmad et al., 2017). Mutual funds can influence the real economy via two channels, that is, the primary and secondary markets. Where the fund flows are positively correlated with subsequent economic growth, this leads to the fact that these flows incorporate additional information related to real economic activities that are not perceived by forecasters (Hoepner et al., 2013). Islamic funds are one of the most important types of mutual funds at the moment.

The purpose of Islamic mutual funds (IMFs) is to achieve religious and ethical objectives without infringing on the traditional needs of diversification, liquidity and performance (Abdelsalam et al., 2014; Azmi et al., 2018). Moreover, as Shariah law prevents many high-risk activities, Islamic financial services have been much less affected by financial crises relative to their respective benchmarks (Hoepner et al., 2013; Makni et al., 2015; Boo et al., 2016). Shariah law prohibits mutual funds from *riba al nasiah*, *maysir*, *gharar* and *haram* products or services and it requires *haram* purification, and prohibits *riba al nasiah* which represents the receipt of interest on capital. Hence, IMFs cannot invest in conventional bonds, warrants, preferred stock, certificates of deposit and some derivatives. The IMF industry has recently seen a dramatic increase in the amount of wealth held by mutual fund managers. The Malaysia International Islamic Financial Centre (2017) reports that the total Islamic Assets Under Management (AUM) in 2017 were USD70.8 billion, and the number of Islamic funds was 1,535. This is a significant increase compared to 2008, when there were only 802 funds with a total of USD47 billion. AUM The largest type of IMFs are equity funds, representing 40 per cent of total Islamic funds. They are followed by fixed income at 17 per cent, and real estate and private equity at 12 per cent.

Abdullah et al., (2007); Abderrezak, (2018); Alam and Rajjaque, (2010); Rubio et al., (2012); Agussalim et al., (2017) examined the performance of IMFs at the fund and index level. This study takes into consideration fund family variables, because the different fund families follow different strategies that distinguish them from each other. Fund families may utilize strategies that depend on the heterogeneity of the investors in terms of investment horizon, such as showing the possibility for investors to switch to different funds from the same family at no cost and increasing the number of funds in the family, adding more options for the investors to select from Brown & Wu, (2012); Clare, O'Sullivan, & Sherman; (2014). Characteristics of fund families including size, age, and the number of funds in the family therefore influence the performance of the funds in these families.

Family size is calculated as all the equity funds under management by a company. The larger fund families can share expenses among a large number of funds, and can also use the same economic data and experts to explain data across funds. In addition, large fund families can benefit from economies of scale from trading commissions and lending fees (Chen et al., 2004). These options act as externalities for all funds belonging to the same family, affecting the purpose level of performance the family needs to achieve and the number of funds it wants. In addition, the number of funds within the same family can increase the investors' selection options, and thus increase the diversity that leads to increased returns.

Some studies indicate IMFs have the ability to achieve profit and preserve positive returns through the bear market (Abdullah et al., 2007; Abderrezak, 2008). Therefore, IMFs considered an alternative in portfolio selection for investors especially during bear markets, can then consider IMFs a good hedging investment, especially against market downturns (Elfakhani et al., 2005). The researchers provide evidence of strong performance between IMFs and Islamic and conventional benchmarks (i.e. FTSE Islamic Indices and S&P 500 Index) during the stagnancy. Different Islamic indexes have emerged in different countries around the world, to provide noteworthy comparisons between the performance of funds and the performance of their benchmarks.

The growth of IMFs in Malaysia is forecast to increase due to higher demand from other different markets, and from a raised degree of investor awareness and confidence. Malaysia is one of the key domiciles contributing to the largest market share of the global Islamic funds industry. The IMF industry in Malaysia started in the 1990s with 2 funds in 1993. In 2009 the number of funds was 150 funds managing total AUM of USD 12.0 billion. In the first quarter of 2017, the number of funds in Malaysia was 388 funds managing total AUM of USD 22.6 billion. The

steadily increasing importance of IMFs as an investment choice in portfolio management and their role in the development of the Islamic financial system motivated us to focus our study on the performance of IMFs (Agussalim et al., 2017). This growth can be attributed to the managers' skills in fund selection and market timing. (Abdelsalam et al., 2014).

The objective of this study is to investigate the extent to which the characteristics of fund families and fund characteristics contribute to explaining fund returns differentiated by managers' stock selection and market timing abilities in Malaysia for the period 2009 to 2016. As a high percentage of IMFs belong to Malaysia, investigating the IMF industry in Malaysia will transfer the orientations and movement of IMFs globally. Due to the dramatic growth of IMFs, the expected return performance of IMFs is higher than that of their benchmarks, especially in a country like Malaysia. Previous studies in Malaysia concluded the IMF industry has the possibility to grow even faster (Nathie, 2008; Abdullah, 2009). Previous studies focused on fund characteristics; this study seeks to provide new evidence about fund family characteristics in addition to fund characteristics. This study also contributes by using three models to separate the performance into a market timing and fund selection.

The importance of this study is that it provides adequate information on the performance of IMFs in the Malaysian market for both regulators and investors. In particular, it provides new evidence about the characteristics of Islamic fund families in Malaysia. Further, the results will provide assistance to investors, fund managers, and market players, who want to invest their money in the market. The study period is from 2009 to 2016, which represents a longer and more recent period, and is comprehensive relative to previous studies. The rest of the paper is organized as follows: Section 2 reviews previous literature; Section 3 describes the data and models used to evaluate performance and test the fund and family characteristics; Section 4 provides the empirical results and discussion; and Section 5 provides the conclusions.

LITERATURE REVIEW

IMFs in Malaysia benefited from the growth in technology and high oil prices, which led to excellent growth during the late 1990s. Most IMFs achieved higher returns compared to their benchmarks. This growth attracted the researchers to test the behaviour of IMF managers and investors. This section reviews, previous studies on the performance of IMFs. Previous studies were divided into three. First, fund performance including fund selection and market timing. Second, fund performance and fund characteristics. Finally, fund performance and family characteristics.

Fund Performance including Fund Selection and Market Timing.

IMFs are analogous to ethical funds in that investors of both share certain values such as beliefs, attitude, and perception. Fund managers also allocate assets according to investors' expectations instead of wealth maximization. Forte and Miglietta (2007), examined whether IMFs can be considered as socially responsible funds. They concluded that both funds differ in terms of asset allocation, but the broad principles are largely similar, as both restrict themselves from investing in socially - and religiously - unacceptable investments.

Abdullah et al., (2007) assessed the performance of Malaysian conventional and IMFs for the period 1992-2001 . Using adjusted Sharpe Index, adjusted Jensen's Alpha to evaluate selectivity ability, and Treynor and Mazuy (1966) Model to evaluate market timing ability, they revealed that market trends correlated with the performance of each fund. The results also suggest that fund managers are unable to correctly identify good bargain stocks and to forecast the price movements of the general market. Analogous implications were found in the Saudi Arabian market by Merdad et al., (2010).

Alam and Rajjaque (2010) investigated the performance of Islamic equities in specific markets as opposed to the general market. Islamic and conventional portfolios were created from the constituents of S&P Europe 350 for the 2007-2009 period. Three markets were created from this index, that is, the general market, market with no financial firms, and market with only Shariah-compliant equities. Their results showed that the first two markets were bested by the final portfolio, although Shariah-compliant equities portfolio experience a slight downturn in performance during an economic uptrend. Hayat and Kraeussl (2011) examined the risk and return characteristics of 145 IEFs over the 2000-2009 period. Performance analysis was done using CAPM and the Treynor and Mazuy model. The results show that Islamic Equity Funds (IEFs) underperformed as compared to Islamic and conventional benchmarks, and their managers had low timing capability.

Hoepner et al., (2013) studied the financial performance and investment styles of 265 Islamic equity funds from 20 countries using the Carhart Four-Factor Model. They concluded that Islamic funds from the six largest Islamic financial centres (the GCC countries and Malaysia) perform competitively or even outperform international equity market benchmarks. On the contrary, Islamic fund portfolios operating in less developed Islamic financial markets underperform the aforementioned benchmarks.

In case of IMF performance persistence, El et al., (2014) investigated the Dow Jones Islamic Index 100

Titans (DJI100). Their analysis was limited by their focus on the recession and booming cycles of the stocks' companies. The results stated persistence was not detected. Agussalim et al., (2017) evaluated the performance of conventional funds and IMFs and found that based on the level of return and Sharpe Index, conventional funds outperform Islamic ones, but the contrary occurs when the level of risk is made as the basis. Arifin (2018) found sufficient evidence for the presence of performance persistence in Indonesian Shariah mutual funds, but the persistence only surfaced in the initial period of study, while in the later stages, it appeared to fade away.

Fund Performance and Fund Characteristics.

Fund characteristics are the most important determinants of fund performance. For example, the performance of large-sized funds differs from that of small-sized funds, which can be attributed to the fact that the fund manager can manage small funds more easily. On the contrary, the size of the large fund could provide more investment alternatives, which would improve the performance of the fund. In addition to the age of the fund, the performance of the young fund may be less than the old fund, because young funds usually incur a significant amount of costs in the form of marketing, floatation, and printing in the early stage.

Bialkowski and Otten (2011), studied the performance of mutual funds in Poland. The results found a positive correlation between fund size and fund performance. Similar implications were found in Otten and Bams, (2002); Fortin and Michelson, (2005); and Ferreira et al., (2006). The findings also revealed no significant relation between expense ratio and the performance.

With regard to fund age, Otten and Bams (2002) investigated the influence of fund characteristics on risk-adjusted performance in European mutual funds. The findings reveal that fund age is negatively related to fund performance, but Low (2010) and Bialkowski and Otten (2011) found no evidence of significant relationships. As for fund risk, Low (2010) examined the relationship between fund performance and fund characteristics in Malaysia. The results indicate that riskier funds are able to generate higher returns.

Ahmad et al., (2017) investigated the fund-specific determinant of the performance of Islamic and conventional mutual funds for the period from 2011 to 2016 in Pakistan. They divided the sample into three subsamples that included overall, Islamic and conventional funds. The findings reveal that turnover and new money have a significant positive impact on the Sharpe Ratio for all three samples of funds. Liquidity is positively and significantly related with the Sharpe Ratio in the case of Islamic funds while for conventional funds, age has a significant positive effect on

fund performance. The expense ratio is negatively associated with the Sharpe Ratio in the case of conventional funds. Fund family and liquidity have been found to be significantly positively related with Jensen's Alpha of conventional funds while new money has a significant negative effect on Jensen's Alpha.

Fund Performance and Family Characteristics.

The strategies of fund families are different to attract investors and improve their performance. Moreover, this difference leads to the different performance of the different funds in these families. As for family characteristics, the study on their impact on fund performance is fairly limited.

Guedj and Papastaikoudi (2004) examined whether mutual fund families affect the performance of the funds they manage, for the period 1990 to 2002 in the USA. The results show that persistence of performance of funds existed inside their respective families. This persistent excess performance was related to the number of funds in the family, which we interpret as a measure of the latitude the family has in allocating resources unevenly between its funds. This is consistent with the view that fund families allocate resources in proportion to fund performance and not fund needs.

Bhojraj et al., (2011) examined whether the previously documented positive association between fund family size and fund performance was affected by significant regulatory changes, for the period from 1992 to 2008 in the USA. The results indicate that while fund family size was positively associated with fund performance in the period prior to the regulatory changes, this advantage was significantly weaker in the period subsequent to the regulatory changes, and that the greater stock-picking skill of larger fund families also weakened subsequent to the regulatory changes. Brown and Wu, (2012) evaluated mutual fund skills based on a fund's own performance and the performance of its family, for the period January 1999 to December 2009 in the USA. The results show family performance had a stronger impact on money flow to a member fund in larger families and families with a larger fraction of team-managed funds, while the sensitivity of flow to a fund's own performance decreased with family size and increased with the correlation of idiosyncratic returns within families.

Clare, O'Sullivan & Sherman (2014) used a large and long sample of US and European mutual funds, to examine the strategic and competitive behaviours among family funds and whether this affected performance persistence and risk-taking. The results do not find evidence of stronger performance persistence among family funds versus non-family funds. The results also show strong evidence that a fund's mid-year ranking within its family and within its sector affected its risk-taking over the remainder of the year.

From the previous discussion, we conclude there is a difference in opinions about the performance of Islamic funds. Some evidence suggests that they are less performing than the market benchmark and conventional funds, and other evidence indicates that they excel in performance especially during the riskiest periods. Moreover, the evidence indicates IMF managers have poor timing ability and poor selectivity ability. This study seeks to contribute by using three selectivity and timing ability models at the same time, to see how adding the timing ability can affect manager selectivity, and to see whether there is any trade-off between the manager's selectivity and timing ability. Moreover, previous studies did not consider family characteristics, although the family allocates resources unevenly between its funds, and as such, family characteristics could affect fund performance. So this study seeks to bridge this gap by examining the impact of family characteristics on the performance of Islamic funds in Malaysia.

DATA AND METHODOLOGY

The sample in this study comprised 50 IMFs, distributed to 20 families. The study used data including the rate of return, total asset, inception date for each fund, and market index prices collected from the Bloomberg database, which provides information on mutual funds. It also offers data in the form of media and news in addition to an Islamic finance platform presenting comprehensive data on IMFs and other Islamic instruments; and provides an Islamic window that provides data on a range of Islamic financial institutions in addition to the rate of return on 3-months' Malaysian Treasury Bills collected from Bank Negara Malaysia. The fund families' characteristics variables, such as family age and the number of the fund in each family were gathered from the annual reports of the fund families. This study used the monthly fund return data to estimate the beta of each fund. The monthly market return was calculated based on the Kuala Lumpur Composite Index (KLCI). Since the family and fund age is annualized, the researcher converted this to a monthly equivalent, to be consistent with the monthly returns of fund and market return.

The analysis employed regression in two stages. In the first stage, the analysis employed Jensen's (1968) model to calculate the overall fund performance and after that the model of Henriksson and Merton (1981), and Treynor and Mazuy (1966) to divide the performance into market timing and fund selection. In the first step, the regression aimed to be a point estimation, to get coefficient estimates of fund selection and timing measures. That means the Jensen's (1968), Henriksson and Merton's (1981) and Treynor and Mazuy (1966) models were used to get fund selection and timing coefficient estimates for each

of the 50 funds. Following Low (2012), these coefficient estimates were then used as (dependent variables) in the second stage, regression analyses sought to test the extent to which fund and families characteristics are associated with selectivity and timing performance measures.

As stated previously, at the first stage, the study used regression analysis in the Jensen (1968) model, Henriksson and Merton (1981) model, and Treynor and Mazuy (1966). Then, it used the Jensen (1968) model, and Henriksson and Merton (1981), and Treynor and Mazuy (1966) model regression to get selectivity and timing estimates to be used in the second-step analyses.

The Jensen's (1968) model is shown by the following regression:

$$R_{i,t} - R_{ft} = \alpha_i + \beta_i (R_{m,t} - R_{ft}) + \epsilon_{i,t} \quad (1)$$

Where, R_{it} is the rate of return of the fund at time t, R_{ft} is the risk-free rate calculated from the 3-months' Malaysian Treasury Bills; $R_{m,t}$ is the rate of return of the market at time t; β_i is the estimated coefficient for the systematic risk of the fund; α_i is the Jensen's performance of the fund; and $\epsilon_{i,t}$ is the random error term. The above equation supposes that the systematic risk of a fund is fixed over time and thus has disregarded the presence of the timing activities of fund managers. So, Jensen's performance model refers to a fund's overall performance fully to the fund manager's stock selection ability. Since it is possible that fund managers participate in market timing activities, Henriksson and Merton (1981) developed a model that allows market timing and selectivity to be estimated at the same time. Henriksson and Merton's (1981) model takes into consideration market timing and stock selection abilities to eliminate the biases in Jensen's performance estimate that disregard market timing activities of fund managers.

The market timing model of Henriksson and Merton (1981) is following the regression equation:

$$HM = R_{i,t} - R_{ft} = \alpha_i + \beta_i (R_{m,t} - R_{ft}) + \delta_i (R_m - R_f) D_t + \varepsilon_i \quad (2)$$

Where, α_i measures stock-selection ability; δ_i is the market timing coefficient; D_t is a dummy variable that takes the value of one if the market return is positive and zero otherwise, and other variables are defined in equation (1). In this equation, δ_i measures a manager's market timing ability and a significant positive (negative) estimate of δ_i is indicative of good (poor) market timing ability.

TM (1966) built a model that recognizes good market timing funds. The market timing is cached by the square of market returns. The model is as follows:

$$T.M = R_i - R_f = \alpha_i + \beta_i R_m - R_f + \gamma_i (R_m - R_f)^2 + \varepsilon_i \quad (3)$$

Where, α_i measures stock-selection ability, $R_{m,t}^2$ is the squared market returns, $\gamma_{i,t}$ indicates market timing, if

positive and significant then the funds are successful and exposure to the market is increased when markets are doing well.

In the second-step analysis, to estimate the importance and the impact of fund and families' characteristics on managerial selectivity and market timing returns, the α_i, t, δ_i, t calculated from equation (2), and φ_{it}, γ_{it} calculated from equation (3), in addition to some fund and family characteristics variables as shown in Equations (3), (4) and (5), (6) respectively.

$$\alpha_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i \quad (4)$$

$$\delta_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}\ \beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i \quad (5)$$

$$\varphi_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i \quad (6)$$

$$\gamma_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i \quad (7)$$

Where α_{it} and δ_i are the selectivity and market-timing measures of fund i at time t calculated from equation (2), $\varphi_{i,t}$ and $\gamma_{i,t}$ are the selectivity and market-timing measures of fund i at time t calculated from equation (3), FR_{it} is the fund i risk at time t calculated from fund beta, FS_{it} is the fund i size at time t calculated from log of fund total assets, FA_{it} is the fund i age at time t calculated from fund inception date, FMA_{it} is the fund family i age at time t calculated from family inception date, FMS_{it} is the fund family i size at time t calculated from log family total asset, FMN_{it} is the number of funds in the family i at time t, and ϵ_{it} is the error term.

EMPIRICAL RESULTS AND DISCUSSION

In the selectivity and market timing models as shown in Tables 3 and 4 for HM model and Tables 5 and 6 for TM model, the Breusch / Cook Weisberg test for heteroscedasticity shows H0: constant variance, meaning there is no heteroscedasticity, and prob>chi2 are 0.1780, 0.1820 respectively for HM model and 0.1630, 0.1580 respectively for TM model, more than 0.05 suggesting that the null hypothesis cannot be rejected. Given the potential problems of multicollinearity among the fund attributes variables, a diagnostic check was performed using variance inflation factors (VIFs). As a rule of thumb, a VIF >10 is taken as an indicator of the presence of multicollinearity and the diagnostic results in Tables 3 and 4 for HM model and Tables 5 and 6 for TM model show that none of the family and fund characteristics variables has a value greater than 10.

Summary of Descriptive Analysis

Table 1 shows the summary statistics for Islamic mutual fund performance measures estimated from the models of Jensen (1968), Henriksson and Merton (1981), and Treynor and Mazuy (1966). In Jensen's (1968) model, **α**1 has a mean value of -0.0030 and it measures selectivity performance when market timing ability is not taken into consideration. That means IMF

Table 1
Summary Statistics for IMF Performance and Independent Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
α_i Jensen	-0.0030	0.1743	-0.5551	0.3961
α_i HM	-0.0050	0.2365	-0.4721	0.7451
δ_i HM	0.0964	0.4482	-2.1631	0.7277
α_i TM	-0.0083	0.2792	-1.6101	0.3526
γ_i TM	0.0828	0.1624	-0.5452	0.3273
Fund Size	1.9658	0.8079	-0.2145	3.7485
Fund Risk	-0.0033	0.0426	-0.2101	0.1651
Fund Age	0.9135	0.7975	0.0833	3.7500
Family Size	2.1407	0.7348	-0.6324	3.1517
Family Age	1.8941	0.8681	0.2500	3.4167
Family Number	0.9792	0.5481	0.0833	2

Table 2
Pairwise Correlation Coefficients

	Selectivity HM	Timing HM	Fund Size	Fund Risk	Fund Age	Family Size	Family Age	Family Number	Selectivity TM	Timing TM
Selectivity HM	1.000									
Timing HM	0.1503	1.000								
Fund Size	-0.0615	0.1004	1.000							
Fund Risk	0.0281	-0.0698	-0.0312	1.000						
Fund Age	0.0764	-0.0176	-0.2835	0.0538	1.000					
Family Z	0.0462	0.0976	0.8251	-0.0451	-.02739	1.000				
Family A	0.1306	0.1145	0.5276	-0.0607	-0.1127	0.6160	1.000			
Family N	0.0381	0.0966	0.6704	0.0301	-0.1117	0.8457	0.7326	1.000		
Selectivity TM	0.0054	0.0065	0.0422	-0.0282	-0.0471	0.0747	0.1471	0.0807	1.000	
Timing TM	-0.0080	-0.0034	0.0254	-0.0208	-0.0283	0.0387	-0.029	0.0024	0.0398	1.00

managers have poor selectivity skills according to Jensen (1968) model.

In Henriksson and Merton (1981) model, when separate selectivity and market timing αH has a mean value of -0.00502 and δ_i which represents market timing has a mean value of 0.09636. In Treynor and Mazuy (1966) that recognizes good market timing funds by cached the square of market returns, αT has a mean value of -0.00831 and γi which represents market timing has a mean value of 0.08279.

Table 1 also shows the summary statistics for independent variables. The mean of individual fund size is 1.966 with standard deviation 0.808, and the mean of individual risk is negative -0.00325 with standard deviation .042565; the mean of individual fund age is 0.9135 with standard deviation 0.7975; the mean of fund family size is 2.141 with standard deviation 0.7348; the mean of fund family age is 1.894 with standard deviation .868; and the mean of the fund number in fund family is 0.9791 with standard deviation 0.548.

The Correlation between Performance Measures and Family, Fund Characteristics

Table 2 presents pairwise correlations for performance measures and independent variables. Selectivity and market timing measures in both HM and TM models have a low significant correlation coefficient of 0.1503 and 0.0398 respectively, suggesting that there is no trade-off between IMF managers' stock selection and market timing abilities, meaning that IMF managers can excel in both activities. Selectivity performance in the HM model is related positively with the fund family age with a correlation coefficient of 0.1306; similarity, selectivity in TM models is positively related with fund family age with correlation coefficient of 0.1471. This suggests that funds with old family managers have good selectivity returns. It is shown that selectivity performance ability has a humble correlation of -0.0615 with fund size and that means the managers of funds with small size have good selectivity returns. On the contrary, selectivity performance in the TM model has positive relation with fund size with correlation coefficient of 0.0422, but has negative relation with fund risk with correlation coefficient of -0.0282, meaning that managers of funds with high risk have poor selectivity skills. Market timing performance in the HM model is shown to be positively correlated with fund family age, also with a correlation coefficient of 0.1145.

This suggests that funds with an old family are better managed by managers with market timing abilities also. However, market timing in the TM model is negatively related to fund family age with correlation coefficient of -0.029, suggesting that funds with a young family are better managed by managers. It is shown that the timing performance in HM and TM model is found to be correlated with the fund risk, with a correlation coefficient of -0.0698 and -0.0203 respectively. This suggests that risky funds characterized by high exposures to broad market movements have poor market timing ability.

Fund family size is negatively and significantly correlated with fund risk, and fund age. The correlation coefficients are -0.0451 and -0.284 for fund risk and fund age respectively, suggesting that larger funds have less risk that are characterized by low exposures to broad market movements and these funds are smaller in size. The high positive correlation of 0.851 between fund family size and fund size and due to that, the fund family size included the average of all individual funds' size.

Islamic Mutual Fund Selectivity and Market Timing According Jensen, HM, and TM Models.

As stated earlier, IMF managers have poor selectivity skills according to the Jensen (1968) model. This result is similar to the results of Abdullah et al., (2007) in Malaysia and Merdad et al., (2010) in Saudi Arabia. While this result conflicts with the results of

Hoepner et al., (2013) which showed that the Islamic funds from the six largest Islamic financial centres (the GCC countries and Malaysia) perform competitively or even outperform international equity market benchmarks, the same study shows a result similar to that of this study in other less developed Islamic financial markets. Since the Jensen model doesn't account for market timing in the model, the Jensen's model would over-estimate the selectivity performance and cause a bias in the estimate of α_i. The Henriksson and Merton HM (1981) model and the Treynor and Mazuy TM (1966) model provide the separate selectivity and market timing components as shown by the estimates of α_H, δ_i, and α_T, γ_i respectively. In Table 1, on average, the manager's market timing activity contributes positively to the fund's return δ_i= 0.09636 for the HM model and γ_i =0.08279 for the TM model, and that means IMF managers have good timing ability according the HM and the TM models.

The return attributed to a manager's stock selection ability after filtering out his market timing activity is captured by α_H = -0.0050 for the HM model and α_T= -0.0083. By taking both market timing and stock selection abilities into consideration, the HM and TM models remove the biases in Jensen's estimate which ignores market timing activities of fund managers. The negative mean values of α_i, α_H and α_T indicate that on average, fund managers' stock selection ability is not adding value to fund returns. Comparison of the three selectivity measures indicates that α_i= -0.0030 is less negative than α_H= -0.0050 and α_T= -0.0083. Thus, the presence of positive timing returns to the Jensen's model has in fact over-estimated the selection ability of managers as shown by a lower negative value of α_H, α_T. Given that the Jensen's model does not filter out the effects of market timing activities, the presence of positive timing return as indicated by a positive value of δ_i and γ_i has somewhat mitigated the degree of negative return associated with selection skill.

The Relationship between Selectivity, Timing under HM Model and Family, Fund Characteristics

Table 3 reports the panel data regression results of selectivity performance as represented by Equation (4). The selectivity regression model is significant and has adjusted R-squared of 0.302, suggesting that family and fund characteristics variables explain almost 30 per cent of the regression variations in managers' selectivity performance. On fund risk, since it is measured using a beta, this fund risk variable captures a fund's exposure to market risk or broad market movement. The coefficient of fund risk is found to be positively and significantly related to selectivity performance, suggesting that risky funds characterized by high exposures to broad market movements seem to show good selectivity returns. That suggests that IMFs perform better

Table 3
Selectivity under HM Model Regression Results

Dependent Variable: Selectivity Performance

$\alpha_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i$

Variable	Coefficient	t-Statistic	Pr>[T]	VIF
Constant	-0.0089	-0.12	0.902	0.000
Fund Size	0.0432	1.17	0.243	6.59
Fund Risk	0.3638	3.42	0.001	5.18
Fund Age	0.0924	-4.13	0.000	3.24
Family Z	-0.0042	-0.07	0.942	2.22
Family A	0.3015	10.56	0.000	1.15
Family N	-0.3247	-4.71	0.000	1.04
F Value= 25.87	Prob>F= 0.000	AdjustedR^2= 0.302		N= 4800

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

H0: Constant variance Chi2 (1) = 1.81 Prob > chi2 = .1780

in bearish market periods which may be associated with high risk, allowing fund managers to find worthwhile investment alternatives, which eventually has the effect of increasing managerial selectivity performance. This result is similar to the result of Low (2010) in Malaysia.

The significant positive coefficient of fund age suggests that newly born or young funds usually incur a significant amount of costs in the form of marketing, floatation, and printing in the early stage of funds, and young funds exhibit a higher market risk. Thus, young funds underperform compared to old funds. Otten and Bams (2002) in European Islamic mutual funds and Ahmad et al., (2017) in Pakistan, but Low (2010) and Bialkowski and Otten (2011) found no evidence of significant relationships. Similarly, there is a significant positive coefficient to fund family age. The significant negative coefficient of number funds in the family suggests that as the number of the funds in the family becomes larger, it becomes more difficult for the fund manager to find worthwhile investment alternatives, which eventually has the effect of decreasing managerial selectivity performance. This could possibly be the reason that managers managing a family with large funds are associated with inferior security selection decisions. The findings show that fund size and family size play no significant roles in influencing the variation in selectivity performance. This can be because IMF managers are bound by limited options when choosing investments and therefore whether the size of the fund or the family is large or small does not affect making of the investment decision. This result corresponds to Bhojraj et al., (2011).

Table 4
Timing Ability under HM Model Regression Results

Dependent Variable: Market Timing Performance

$\delta_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i$

Variable	Coefficient	T-Statistic	Pr>[T]	VIF
Constant	-0.0459	-0.42	0.673	0.000
Fund Size	0.1091	1.96	0.050	6.59
Fund Risk	-0.4540	-0.76	0.449	5.18
Fund Age	0.1096	-3.25	0.001	3.24
Family Z	0.0551	-0.63	0.528	2.22
Family A	0.1708	4.98	0.000	1.15
Family N	0.0476	0.46	0.647	1.04
F Value= 14.36	Prob>F= 0.000	Adjusted R^2= 0.164		N= 4800

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

H0: Constant variance Chi2 (1) = 1.92 Prob > chi2 = .1820

Table 4 reports the panel data regression results of timing performance as represented by Equation (5). The regression model is significant with adjusted R-squared of 0.164, indicating that family and fund characteristics variables explain 16 per cent of the variations in market timing performance. The coefficients of fund age and family age are highly significant and are shown to be positively related to timing return. The directions of the relationships are the same as those found for selectivity performance as reported in Table 3. This somewhat reinforces the findings that if a manager is engaged in both stock selection and market timing activities, there is no trade-off between an Islamic mutual fund manager's stock selection and market timing abilities, which means that Islamic mutual fund managers can excel in both activities.

The findings also show the positive significant relationship between market timing and fund size, which means larger funds have better timing returns than smaller ones, implying that large funds put managers in a better position to exploit the predictability of market returns to increase fund returns. This possibly reflects the efficiencies of large funds in responding to changes in broad market movements. In other words, if a change in market trend is anticipated by a fund manager, it would cost less to make an adjustment to the portfolio holding possibly due to the existence of economies of scale among large funds. Hence, this contributes to increasing fund returns from the market timing activities of fund managers. The findings also reveal that fund risk, family size, and the number of funds in a family have no significant relation to a manager's market timing performance.

Table 5
Selectivity under TM Model Regression Results

Dependent Variable: Market Timing Performance

$\Phi_{I,T}=\beta_0+\beta_1 FR_{I,T}+\beta_2 FS_{I,T}+\beta_3 FA_{I,T}+\beta_4 FMZ_{I,T}+\beta 5 FMA_{I,T}+\beta_6 FMN_{I,T}+\epsilon_I$

Variable	Coefficient	T-Statistic	Pr>[T]	VIF
Constant	-0.0389	-0.64	0.525	0.000
Fund Size	-0.1025	-3.28	0.001	6.21
Fund Risk	-0.2143	-0.64	0.526	1.01
Fund Age	0.0443	2.34	0.019	1.11
Family Z	-0.1021	-2.08	0.037	5.76
Family A	0.2189	9.07	0.000	1.64
Family N	-0.1301	-2.23	0.026	5.18
F Value= 21.84	Prob>F= 0.000	Adjusted R_2= 0.267		N= 4800

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

H0: Constant variance Chi2 (1) = 1.28 Prob > chi2 = .1630

The Relationship Between Selectivity, Timing under TM Model and Family, Fund Characteristics

Table 5 shows the panel data regression results of selectivity performance as represented by Equation (6). The selectivity regression model is significant and has adjusted R-squared of 0.267, suggesting that family and fund characteristics variables explain almost 27 per cent of the regression variations in managers' selectivity performance.

On family age, the coefficient of a family age is found to be positively and significantly related to selectivity performance, suggesting that managers of an old family have good selectivity, due to an old family having more stability. Since a young family usually incurs a significant amount of costs in the form of marketing and floatation, the same result was recorded for fund age. The results also show that fund size, family size and number of funds in the family are negatively and significantly related to selectivity, suggesting that managers of small funds and a small number of funds in the family have good selectivity, due to the managers being able to easily manage these funds and families. The results also indicate there is no significant relation between managers' selectivity and fund risk that may be due to the IMF managers seeking to achieve the religious objective next to traditional goals.

Table 6 reports the panel data regression results of timing performance as represented by Equation (7). The regression model is significant with adjusted R-squared of 0.282, indicating that family and fund characteristics variables explain 28 per cent of the variations in market timing performance. The coefficients of fund age are highly significant and are shown to be negatively related to timing return. This means managers of old funds have poor market timing ability, which may be due to old funds needing highly experienced managers.

Table 6

Timing Ability under TM Model Regression Results

Dependent Variable: Market Timing Performance

$\gamma_{i,t}=\beta_0+\beta_1 FR_{i,t}+\beta_2 FS_{i,t}+\beta_3 FA_{i,t}+\beta_4 FMZ_{i,t}+\beta_5 FMA_{i,t}+\beta_6 FMN_{i,t}+\epsilon_i$

Variable	Coefficient	T-Statistic	Pr>[T]	VIF
Constant	0.2977	4.21	0.665	0.000
Fund Size	-0.0395	-1.09	0.273	6.59
Fund Risk	0.3048	0.78	0.021	5.12
Fund Age	-0.0103	-0.47	0.002	3.21
Family Z	0.2252	3.97	0.015	1.22
Family A	-0.0120	-0.43	0.665	1.05
Family N	-0.1982	-0.43	0.003	1.14
F Value= 22.57	Prob>F= 0.002	Adjusted R^2= 0.282		N= 4800

Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

H0: Constant variance Chi2 (1) = 1.33 Prob > chi2 = .1580

The findings also show positive significant relationship between market timing and family size, meaning that a larger family has better timing returns than a smaller one, implying that large families put managers in a better position to exploit the predictability of market returns to increase fund returns. This possibly reflects the efficiencies of a large family in responding to changes in broad market movements. As for fund risk, the coefficient of fund risk is found to be positively and significantly related to timing ability suggesting that risky funds characterized by high exposures to broad market movements seem to show good timing ability. That suggests that IMFs perform better in bearish market periods, which may be associated with high risk, allowing fund managers to know the good time related with good performance. With regard to the number of funds in the family, a similar result was recorded, showing selectivity skills are negatively and significantly related to managers' timing ability. This suggests that the managers of funds with a small number of funds in the family have good selectivity, due to the managers being easily able to manage these funds and families. The results also indicate no significant relation between mangers' timing ability and fund size and family age.

CONCLUSION

The objective of this study is to test Islamic mutual fund managers' selectivity skills and market timing ability. The study also aims to explore which of a family's and fund's characteristics are helpful in identifying funds with superior investment decisions driven by managers' activities of selecting stocks and timing broad market movements, for the period 2009 to 2016 in Malaysia. The results show IMF managers have poor selectivity skills and good market timing ability. With regard to family characteristics, the results show that the family age and the number of funds in

the family have an impact on managers' selectivity skills according to the H&M model, and family size, family age have an impact on managers' selectivity skills according to the T&M model. In addition, the results indicate that family age has an impact on managers' timing ability according to the H&M model, and family size and number of funds in the family have an impact on managers' timing ability according to the T&M model. As for fund characteristics, the results show that fund risk and fund age have an impact on managers' selectivity skills according to the H&M model, and fund size and fund age have an impact on managers' selectivity skills according to the T&M model. In addition, the results indicate that fund size and fund age have an impact on managers' market timing ability according to the H&M model, and all three variables have an impact on managers' market timing ability according to the T&M model.

The findings of this study are useful to investors and provide potential policy implications to the fund management industry. Since the investment actions of managers are not directly observable by investors, the findings on what family and fund characteristics affect managerial performance components provide useful insights to investors in making investment decisions. This study delivers new evidence on the determinants of performance related to fund family characteristics. The findings of this study expand the existing scarce literature that highlights the important influence of fund characteristics in general, and family characteristics in particular, on managerial selectivity and market timing returns. Finally, this study can encourage researchers in the area of mutual funds to further extend this subject. Firstly, by employing more sophisticated models of performance such as CAPM, Fama French, and Carhart models. Secondly, this study can be extended to other countries. Thirdly, more studies can be done to incorporate fund manager attributes as well in determining fund performance. ■

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